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BEFORE THE

Interstate Commerce Commission.

UNITED STATES SAFETY-APPLIANCE STANDARDS.

March 13, 1911.

ORDER OF THE COMMISSION.

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ORDER.

At a General Session of the INTERSTATE COMMERCE COMMISSION, held at its office in Washington, D. C., on the 13th day of March, A. D. 1911.

Present:

Judson C. Clements, Charles A. Prouty, Franklin K. Lane, Edgar E. Clark, James S. Harlan, Charles C. McChord, Balthasar H. Meyer.	Commissioners.

IN THE MATTER OF DESIGNATING THE NUMBER, DIMENSIONS, LOCATION, AND MANNER OF APPLICATION OF CERTAIN SAFETY APPLIANCES.

Whereas by the third section of an act of Congress approved April 14, 1910, entitled "An act to supplement 'An act to promote the safety of employees and travelers upon railroads by compelling common carriers engaged in interstate commerce to equip their cars with automatic couplers and continuous brakes and their locomotives with driving-wheel brakes, and for other purposes,' and other safety appliance acts, and for other purposes," it is provided, among other things, "That within six months from the passage of this act the Interstate Commerce Commission, after hearing, shall designate the number, dimensions, location, and manner of application of the appliances provided for by section two of this act and section four of the act of March second, eighteen hundred and ninety-three, and shall give notice of such designation to all common carriers subject to the provisions of this act by such means as the Commission may deem proper, and thereafter said number, location, dimensions, and manner of application as designated by said Commission shall remain as the standards of equipment to be used on all cars subject to the provisions of this act, unless changed by an order of said Interstate Commerce Commission, to be made after full hearing and for good cause shown; and failure to comply with any such requirement of the Interstate Commerce Commission shall be subject to a like penalty as failure to comply with any requirement of this act: *Provided*, That the Interstate Commerce Commission may, upon full hearing and for good cause, extend the period within which any common carrier shall comply with the provisions of this section with respect to the equipment of cars actually in service upon the date of the passage of this act;" and

Whereas hearings in the matter of the number, dimensions, location, and manner of application of the appliances, as provided in said section of said act, were held before the Interstate Commerce Commission at its office in Washington, D. C., on September 29th and 30th and October 7th, 1910, respectively; and February 27th, 1911;

Now, therefore, in pursuance of and in accordance with the provisions of said section three of said act, and superseding the Commission's order of October 13, 1910, relative thereto

It is ordered, That the number, dimensions, location, and manner of application of the appliances provided for by section two of the act of April 14, 1910, and section four of the act of March 2, 1893, shall be as follows:

BOX AND OTHER HOUSE CARS.

HAND-BRAKES:

Number: Each box or other house car shall be equipped with an efficient hand-brake which shall operate in harmony with the power-brake thereon.

The hand-brake may be of any efficient design, but must provide the same degree of safety as the design shown on Plate A.

Dimensions: The brake-shaft shall be not less than one and one-fourth (1¼) inches in diameter, of wrought iron or steel without weld.

The brake-wheel may be flat or dished, not less than fifteen (15), preferably sixteen (16), inches in diameter, of malleable iron, wrought iron or steel.

Location: The hand-brake shall be so located that it can be safely operated while car is in motion.

The brake-shaft shall be located on end of car, to the left of and not less than seventeen (17) nor more than twenty-two (22) inches from center.

Manner of Application: There shall be not less than four (4) inches clearance around rim of brake-wheel.

Outside edge of brake-wheel shall be not less than four (4) inches from a vertical plane parallel with end of car and passing through the inside face of knuckle when closed with coupler-horn against the buffer-block or end-sill.

Top brake-shaft support shall be fastened with not less than one-half (½) inch bolts or rivets. (See Plate A.)

A brake-shaft step shall support the lower end of brake-shaft. A brake-shaft step which will permit the brake-chain to drop under the brake-shaft shall not be used. U-shaped form of brake-shaft step is preferred. (See Plate A.)

Brake-shaft shall be arranged with a square fit at its upper end to secure the hand-brake wheel; said square fit shall be not less than seven-eighths (⅞) of an inch square. Square-fit taper; nominally two (2) in twelve (12) inches. (See Plate A.)

Brake-chain shall be of not less than three-eighths (⅜), preferably seven-sixteenths ($\frac{7}{16}$), inch wrought iron or steel, with a link on the brake-rod end of not less than seven-sixteenths ($\frac{7}{16}$), preferably one-half (½), inch wrought iron or steel, and shall be secured to brake-shaft drum by not less than one-half (½) inch hexagon or square-headed bolt. Nut on said bolt shall be secured by riveting end of bolt over nut. (See Plate A.)

Lower end of brake-shaft shall be provided with a trunnion of not less than three-fourths (¾), preferably one (1), inch in diameter extending through brake-shaft step and held in operating position by a suitable cotter or ring. (See Plate A.)

Brake-shaft drum shall be not less than one and one-half (1½) inches in diameter. (See Plate A.)

Brake ratchet-wheel shall be secured to brake-shaft by a key or square fit; said square fit shall be not less than one and five-sixteenths ($1\frac{5}{16}$) inches square. When ratchet-wheel with square fit is used provision shall be made to prevent ratchet-wheel from rising on shaft to disengage brake-pawl. (See Plate A.)

Brake ratchet-wheel shall be not less than five and one-fourth (5¼), preferably five and one-half (5½), inches in diameter and shall have not less than fourteen (14), preferably sixteen (16), teeth. (See Plate A.)

If brake ratchet-wheel is more than thirty-six (36) inches from brake-wheel, a brake-shaft support shall be provided to support this extended upper portion of brake-shaft; said brake-shaft support shall be fastened with not less than one-half (½) inch bolts or rivets.

The brake-pawl shall be pivoted upon a bolt or rivet not less than five-eighths (⅝) of an inch in diameter, or upon a trunnion secured by not less than one-half (½) inch bolt or rivet, and there shall be a rigid metal connection between brake-shaft and pivot of pawl.

Brake-wheel shall be held in position on brake-shaft by a nut on a threaded extended end of brake-shaft; said threaded portion shall be not less than three-fourths (¾) of an inch in diameter; said nut shall be secured by riveting over or by the use of a lock-nut or suitable cotter.

Brake-wheel shall be arranged with a square fit for brake-shaft in hub of said wheel; taper of said fit, nominally two (2) in twelve (12) inches. (See Plate A.)

BRAKE-STEP: If brake-step is used, it shall be not less than twenty-eight (28) inches in length. Outside edge shall be not less than eight (8) inches from face of car and not less than four (4) inches from a vertical plane parallel with end of car and passing through the inside face of knuckle when closed with coupler-horn against the buffer-block or end-sill.

Manner of Application: Brake-step shall be supported by not less than two metal braces having a minimum cross-sectional area three-eighths ($\frac{3}{8}$) by one and one-half ($1\frac{1}{2}$) inches or equivalent, which shall be securely fastened to body of car with not less than one-half ($\frac{1}{2}$) inch bolts or rivets.

RUNNING-BOARDS:

Number: One (1) longitudinal running-board.

On outside-metal-roof cars two (2) latitudinal extensions.

Dimensions: Longitudinal running-board shall be not less than eighteen (18), preferably twenty (20), inches in width.

Latitudinal extensions shall be not less than twenty-four (24) inches in width.

Location: Full length of car, center of roof.

On outside-metal-roof cars there shall be two (2) latitudinal extensions from longitudinal running-board to ladder locations, except on refrigerator cars where such latitudinal extensions can not be applied on account of ice hatches.

Manner of Application: Running-boards shall be continuous from end to end and not cut or hinged at any point: *Provided*, That the length and width of running-boards may be made up of a number of pieces securely fastened to saddle-blocks with screws or bolts.

The ends of longitudinal running-board shall be not less than six (6) nor more than ten (10) inches from a vertical plane parallel with end of car and passing through the inside face of knuckle when closed with coupler-horn against the buffer-block or end-sill; and if more than four (4) inches from edge of roof of car, shall be securely supported their full width by substantial metal braces.

Running-boards shall be made of wood and securely fastened to car.

SILL-STEPS:

Number: Four (4).

Dimensions: Minimum cross-sectional area one-half ($\frac{1}{2}$) by one and one-half ($1\frac{1}{2}$) inches, or equivalent, of wrought iron or steel.

Minimum length of tread, ten (10), preferably twelve (12), inches.

Minimum clear depth, eight (8) inches.

Location: One (1) near each end on each side of car, so that there shall be not more than eighteen (18) inches from end of car to center of tread of sill-step.

Outside edge of tread of step shall be not more than four (4) inches inside of face of side of car, preferably flush with side of car.

Tread shall be not more than twenty-four (24), preferably not more than twenty-two (22), inches above the top of rail.

Manner of Application: Sill-steps exceeding twenty-one (21) inches in depth shall have an additional tread.

Sill-steps shall be securely fastened with not less than one-half (½) inch bolts with nuts outside (when possible) and riveted over, or with not less than one-half (½) inch rivets.

LADDERS:

Number: Four (4).

Dimensions: Minimum clear length of tread: Side ladders sixteen (16) inches; end ladders fourteen (14) inches.

Maximum spacing between ladder-treads, nineteen (19) inches.

Top ladder-tread shall be located not less than twelve (12) nor more than eighteen (18) inches from roof at eaves.

Spacing of side ladder treads shall be uniform within a limit of two (2) inches from top ladder tread to bottom tread of ladder.

Maximum distance from bottom tread of side ladder to top tread of sill step, twenty-one (21) inches.

End ladder treads shall be spaced to coincide with treads of side ladders, a variation of two (2) inches being allowed. Where construction of car will not permit the application of a tread of end ladder to coincide with bottom tread of side ladder, the bottom tread of end ladder must coincide with second tread from bottom of side ladder.

Hard-wood treads, minimum dimensions one and one-half (1½) by two (2) inches.

Iron or steel treads, minimum diameter five-eighths (⅝) of an inch.

Minimum clearance of treads, two (2), preferably two and one-half (2½), inches.

Location: One (1) on each side, not more than eight (8) inches from right end of car; one (1) on each end, not more than eight (8) inches from left side of car; measured from inside edge of ladder-stile or clearance of ladder treads to corner of car.

Manner of Application: Metal ladders without stiles near corners of cars shall have foot guards or upward projections not less than two (2) inches in height near inside end of bottom treads.

Stiles of ladders, projecting two (2) or more inches from face of car, will serve as foot-guards.

Ladders shall be securely fastened with not less than one-half (½) inch bolts with nuts outside (when possible) and riveted over, or with not less than one-half (½) inch rivets. Three-eighths (⅜) inch bolts may be used for wooden treads which are gained into stiles.

END-LADDER CLEARANCE:

No part of car above end-sills within thirty (30) inches from side of car, *except* buffer-block, brake-shaft, brake-wheel, brake-step, running-board or uncoupling-lever shall extend to within twelve (12) inches of a vertical plane parallel with end of car and passing through the inside face of knuckle when closed with coupler-horn against the buffer-block or end-sill, and no other part of end of car or fixtures on same above end-sills, other than exceptions herein noted, shall extend beyond the outer face of buffer-block.

ROOF-HANDHOLDS:

NUMBER: One (1) over each ladder.

One (1) right-angle handhold may take the place of two (2) adjacent specified roof-handholds, provided the dimensions and locations coincide, and that an extra leg is securely fastened to car at point of angle.

DIMENSIONS: Minimum diameter, five-eighths ($\frac{5}{8}$) of an inch, wrought iron or steel.

Minimum clear length, sixteen (16) inches.

Minimum clearance, two (2), preferably two and one-half ($2\frac{1}{2}$), inches.

LOCATION: On roof of car: One (1) parallel to treads of each ladder, not less than eight (8) nor more than fifteen (15) inches from edge of roof, *except* on refrigerator cars where ice hatches prevent, when location may be nearer edge of roof.

MANNER OF APPLICATION: Roof-handholds shall be securely fastened with not less than one-half ($\frac{1}{2}$) inch bolts with nuts outside (when possible) and riveted over, or with not less than one-half ($\frac{1}{2}$) inch rivets.

SIDE-HANDHOLDS:

NUMBER: Four (4).

[*Tread of side-ladder is a side-handhold.*]

DIMENSIONS: Minimum diameter, five-eighths ($\frac{5}{8}$) of an inch, wrought iron or steel.

Minimum clear length, sixteen (16) inches, preferably twenty-four (24) inches.

Minimum clearance, two (2), preferably two and one-half ($2\frac{1}{2}$), inches.

LOCATION: Horizontal: One (1) near each end on each side of car.

Side-handholds shall be not less than twenty-four (24) nor more than thirty (30) inches above center line of coupler, *except* as provided above, where tread of ladder is a handhold. Clearance of outer end of handhold shall be not more than eight (8) inches from end of car.

MANNER OF APPLICATION: Side-handholds shall be securely fastened with not less than one-half ($\frac{1}{2}$) inch bolts with nuts outside (when possible) and riveted over, or with not less than one-half ($\frac{1}{2}$) inch rivets.

HORIZONTAL END-HANDHOLDS:

Number: Eight (8) or more. (Four (4) on each end of car.)

[*Tread of end-ladder is an end-handhold.*]

Dimensions: Minimum diameter, five-eighths (⅝) of an inch, wrought iron or steel.

Minimum clear length, sixteen (16) inches, preferably twenty-four (24) inches.

A handhold fourteen (14) inches in length may be used where it is impossible to use one sixteen (16) inches in length.

Minimum clearance, two (2), preferably two and one-half (2½), inches.

Location: One (1) near each side on each end of car, not less than twenty-four (24) nor more than thirty (30) inches above center line of coupler, *except* as provided above, when tread of end-ladder is an end-handhold. Clearance of outer end of handhold shall be not more than eight (8) inches from side of car.

One (1) near each side of each end of car on face of end-sill or sheathing over end-sill, projecting outward or downward. Clearance of outer end of handhold shall be not more than sixteen (16) inches from side of car.

On each end of cars with platform end-sills six (6) or more inches in width, measured from end-post or siding and extending entirely across end of car, there shall be one additional end-handhold not less than twenty-four (24) inches in length, located near center of car, not less than thirty (30) nor more than sixty (60) inches above platform end-sill.

Manner of Application: Horizontal end-handholds shall be securely fastened with not less than one-half (½) inch bolts with nuts outside (when possible) and riveted over, or with not less than one-half (½) inch rivets.

VERTICAL END-HANDHOLDS:

Number: Two (2) on full-width platform end-sill cars, as heretofore described.

Dimensions: Minimum diameter five-eighths (⅝) of an inch, wrought iron or steel.

Minimum clear length, eighteen (18), preferably twenty-four (24), inches.

Minimum clearance two (2), preferably two and one-half (2½), inches.

Location: One (1) on each end of car opposite ladder, not more than eight (8) inches from side of car; clearance of bottom end of handhold shall be not less than twenty-four (24) nor more than thirty (30) inches above center line of coupler.

Manner of Application: Vertical end-handholds shall be securely fastened with not less than one-half (½) inch bolts with nuts outside (when possible) and riveted over, or with not less than one-half (½) inch rivets.

UNCOUPLING-LEVERS:

NUMBER: Two (2).

Uncoupling-levers may be either single or double, and of any efficient design.

DIMENSIONS: Handles of uncoupling-levers, *except* those shown on Plate B or of similar designs, shall be not more than six (6) inches from sides of car.

Uncoupling-levers of design shown on Plate B and of similar designs shall conform to the following-prescribed limits:

Handles shall be not more than twelve (12), preferably nine (9), inches from sides of cars. Center lift-arms shall be not less than seven (7) inches long.

Center of eye at end of center lift-arm shall be not more than three and one-half (3½) inches beyond center of eye of uncoupling-pin of coupler when horn of coupler is against the buffer-block or end-sill. (See Plate B.)

Ends of handles shall extend not less than four (4) inches below bottom of end-sill or shall be so constructed as to give a minimum clearance of two (2) inches around handle. Minimum drop of handles shall be twelve (12) inches; maximum, fifteen (15) inches over all. (See Plate B.)

Handles of uncoupling-levers of the "rocking" or "push-down" type shall be not less than eighteen (18) inches from top of rail when lock-block has released knuckle, and a suitable stop shall be provided to prevent inside arm from flying up in case of breakage.

LOCATION: One (1) on each end of car.

When single lever is used it shall be placed on left side of end of car.

HOPPER CARS AND HIGH-SIDE GONDOLAS WITH FIXED ENDS.

[*Cars with sides more than thirty-six (36) inches above the floor are high-side cars.*]

HAND-BRAKES:

NUMBER: Same as specified for "Box and other house cars."

DIMENSIONS: Same as specified for "Box and other house cars."

LOCATION: Each hand-brake shall be so located that it can be safely operated while car is in motion.

The brake-shaft shall be located on end of car to the left of, and not more than twenty-two (22) inches from, center.

MANNER OF APPLICATION: Same as specified for "Box and other house cars."

BRAKE-STEP: Same as specified for "Box and other house cars."

SILL-STEPS: Same as specified for "Box and other house cars."

LADDERS:

Number: Same as specified for "Box and other house cars."

Dimensions: Same as specified for "Box and other house cars," *except* that top ladder-tread shall be located not more than four (4) inches from top of car.

Location: Same as specified for "Box and other house cars."

Manner of Application: Same as specified for "Box and other house cars."

SIDE-HANDHOLDS: Same as specified for "Box and other house cars."

HORIZONTAL END-HANDHOLDS: Same as specified for "Box and other house cars."

VERTICAL END-HANDHOLDS: Same as specified for "Box and other house cars."

UNCOUPLING-LEVERS: Same as specified for "Box and other house cars."

END-LADDER CLEARANCE:

No part of car above end-sills within thirty (30) inches from side of car, *except* buffer-block, brake-shaft, brake-wheel, brake-step or uncoupling-lever shall extend to within twelve (12) inches of a vertical plane parallel with end of car and passing through the inside face of knuckle when closed with coupler horn against the buffer-block or end-sill, and no other part of end of car or fixtures on same above end-sills, other than exceptions herein noted, shall extend beyond the outer face of buffer-block.

DROP-END HIGH-SIDE GONDOLA CARS.

HAND-BRAKES:

Number: Same as specified for "Box and other house cars."

Dimensions: Same as specified for "Box and other house cars."

Location: Each hand-brake shall be so located that it can be safely operated while car is in motion.

The brake-shaft shall be located on end of car to the left of center.

Manner of Application: Same as specified for "Box and other house cars."

SILL-STEPS: Same as specified for "Box and other house cars."

LADDERS:

Number: Two (2).

Dimensions: Same as specified for "Box and other house cars," *except* that top ladder-tread shall be located not more than four (4) inches from top of car.

LOCATION: One (1) on each side, not more than eight (8) inches from right end of car, measured from inside edge of ladder-stile or clearance of ladder-treads to corner of car.

MANNER OF APPLICATION: Same as specified for "Box and other house cars."

SIDE-HANDHOLDS: Same as specified for "Box and other house cars."

HORIZONTAL END-HANDHOLDS:

NUMBER: Four (4).

DIMENSIONS: Same as specified for "Box and other house cars."

LOCATION: One (1) near each side of each end of car on face of end-sill. Clearance of outer end of handhold shall be not more than sixteen (16) inches from side of car.

MANNER OF APPLICATION: Same as specified for "Box and other house cars."

UNCOUPLING-LEVERS: Same as specified for "Box and other house cars."

END-LADDER CLEARANCE:

No part of car above end sills within thirty (30) inches from side of car, *except* buffer-block, brake-shaft, brake-wheel or uncoupling-lever shall extend to within twelve (12) inches of a vertical plane parallel with end of car and passing through the inside face of knuckle when closed with coupler-horn against the buffer-block or end-sill, and no other part of end of car or fixtures on same above end-sills, other than exceptions herein noted, shall extend beyond the outer face of buffer-block.

FIXED-END LOW-SIDE GONDOLA AND LOW-SIDE HOPPER CARS.

[*Cars with sides thirty-six (36) inches or less above the floor are low-side cars.*]

HAND-BRAKES:

NUMBER: Same as specified for "Box and other house cars."

DIMENSIONS: Same as specified for "Box and other house cars."

LOCATION: Each hand-brake shall be so located that it can be safely operated while car is in motion.

The brake-shaft shall be located on end of car, to the left of and not more than twenty-two (22) inches from center.

MANNER OF APPLICATION: Same as specified for "Box and other house cars."

BRAKE-STEP: Same as specified for "Box and other house cars."

SILL-STEPS: Same as specified for "Box and other house cars."

SIDE-HANDHOLDS:

NUMBER: Same as specified for "Box and other house cars."

DIMENSIONS: Same as specified for "Box and other house cars."

LOCATION: Horizontal: One (1) near each end on each side of car, not less than twenty-four (24) nor more than thirty (30) inches above center line of coupler, if car construction will permit, but handhold shall not project above top of side. Clearance of outer end of handhold shall be not more than eight (8) inches from end of car.

MANNER OF APPLICATION: Same as specified for "Box and other house cars."

HORIZONTAL END-HANDHOLDS:

NUMBER: Same as specified for "Box and other house cars."

DIMENSIONS Same as specified for "Box and other house cars."

LOCATION: One (1) near each side on each end of car not less than twenty-four (24) nor more than thirty (30) inches above center line of coupler, if car construction will permit. Clearance of outer end of handhold shall be not more than eight (8) inches from side of car.

One (1) near each side of each end of car on face of end sill, projecting outward or downward. Clearance of outer end of handhold shall be not more than sixteen (16) inches from side of car.

MANNER OF APPLICATION: Same as specified for "Box and other house cars."

UNCOUPLING-LEVERS:

Same as specified for "Box and other house cars."

END-LADDER CLEARANCE:

No part of car above end-sills within thirty (30) inches from side of car, *except* buffer-block, brake-shaft, brake-step, brake-wheel or uncoupling-lever shall extend to within twelve (12) inches of a vertical plane parallel with end of car and passing through the inside face of knuckle when closed with coupler-horn against the buffer-block or end-sill, and no other part of end of car or fixtures on same above end-sills, other than exceptions herein noted, shall extend beyond the outer face of buffer-block.

DROP-END LOW-SIDE GONDOLA CARS.

HAND-BRAKES:

NUMBER: Same as specified for "Box and other house cars."

DIMENSIONS: Same as specified for "Box and other house cars."

LOCATION: Each hand-brake shall be so located that it can be safely operated while car is in motion.

The brake-shaft shall be located on end of car to the left of center.

MANNER OF APPLICATION: Same as specified for "Box and other house cars," provided that top brake shaft support may be omitted.

SILL-STEPS: Same as specified for "Box and other house cars."

SIDE-HANDHOLDS:

Number: Same as specified for "Box and other house cars."

Dimensions: Same as specified for "Box and other house cars."

Location: Horizontal: One (1) near each end on each side of car, not less than twenty-four (24) nor more than thirty (30) inches above center line of coupler, if car construction will permit, but handhold shall not project above top of side. Clearance of outer end of handhold shall be not more than eight (8) inches from end of car.

Manner of Application: Same as specified for "Box and other house cars."

END-HANDHOLDS:

Number: Four (4).

Dimensions: Same as specified for "Box and other house cars."

Location: Horizontal: One (1) near each side of each end of car on face of end sill. Clearance of outer end of handhold shall be not more than sixteen (16) inches from side of car.

Manner of Application: Same as specified for "Box and other house cars."

UNCOUPLING-LEVERS: Same as specified for "Box and other house cars."

END-LADDER CLEARANCE:

No part of car above end sills within thirty (30) inches from side of car, *except* buffer-block, brake-shaft, brake-wheel or uncoupling-lever shall extend to within twelve (12) inches of a vertical plane parallel with end of car and passing through the inside face of knuckle when closed with coupler-horn against the buffer-block or end-sill, and no other part of end of car or fixtures on same above end-sills, other than exceptions herein noted, shall extend beyond the outer face of buffer-block.

FLAT CARS.

[*Cars with sides twelve (12) inches or less above the floor may be equipped the same as flat cars.*]

HAND-BRAKES:

Number: Same as specified for "Box and other house cars."

Dimensions: Same as specified for "Box and other house cars."

Location: Each hand-brake shall be so located that it can be safely operated while car is in motion.

The brake-shaft shall be located on the end of car to the left of center, or on side of car not more than thirty-six (36) inches from right-hand end thereof.

Manner of Application: Same as specified for "Box and other house cars."

SILL-STEPS: Same as specified for "Box and other house cars."

SIDE-HANDHOLDS:

Number: Same as specified for "Box and other house cars."

Dimensions: Same as specified for "Box and other house cars."

Location: Horizontal: One (1) on face of each side-sill near each end. Clearance of outer end of handhold shall be not more than twelve (12) inches from end of car.

Manner of Application: Same as specified for "Box and other house cars."

END-HANDHOLDS:

Number: Four (4).

Dimensions: Same as specified for "Box and other house cars."

Location: Horizontal: One (1) near each side of each end of car on face of end-sill. Clearance of outer end of handhold shall be not more than sixteen (16) inches from side of car.

Manner of Application: Same as specified for "Box and other house cars."

UNCOUPLING-LEVERS: Same as specified for "Box and other house cars."

TANK-CARS WITH SIDE-PLATFORMS.

HAND-BRAKES:

Number: Same as specified for "Box and other house cars."

Dimensions: Same as specified for "Box and other house cars."

Location: Each hand-brake shall be so located that it can be safely operated while car is in motion.

The brake-shaft shall be located on end of car to the left of center.

Manner of Application: Same as specified for "Box and other house cars."

SILL-STEPS: Same as specified for "Box and other house cars."

SIDE-HANDHOLDS:

Number: Four (4) or more.

Dimensions: Same as specified for "Box and other house cars."

Location: Horizontal: One (1) on face of each side-sill near each end. Clearance of outer end of handhold shall be not more than twelve (12) inches from end of car.

If side safety-railings are attached to tank or tank-bands, four (4) additional vertical handholds shall be applied, one (1) as nearly as possible over each sill-step and securely fastened to tank or tank-band.

MANNER OF APPLICATION: Same as specified for "Box and other house cars."

END-HANDHOLDS:

NUMBER: Four (4).

DIMENSIONS: Same as specified for "Box and other house cars."

LOCATION: Horizontal: One (1) near each side of each end of car on face of end-sill. Clearance of outer end of handhold shall be not more than sixteen (16) inches from side of car.

MANNER OF APPLICATION: Same as specified for "Box and other house cars."

TANK-HEAD HANDHOLDS:

NUMBER: Two (2). [*Not required if safety-railing runs around ends of tank.*]

DIMENSIONS: Minimum diameter five-eighths ($\frac{5}{8}$) of an inch, wrought iron or steel. Minimum clearance two (2), preferably two and one-half ($2\frac{1}{2}$), inches. Clear length of handholds shall extend to within six (6) inches of outer diameter of tank at point of application.

LOCATION: Horizontal: One (1) across each head of tank not less than thirty (30) nor more than sixty (60) inches above platform.

MANNER OF APPLICATION: Tank-head handholds shall be securely fastened.

SAFETY-RAILINGS:

NUMBER: One (1) continuous safety-railing running around sides and ends of tank, securely fastened to tank or tank-bands at ends and sides of tank; or two (2) running full length of tank at sides of car supported by posts.

DIMENSIONS: Not less than three-fourths ($\frac{3}{4}$) of an inch, iron.

LOCATION: Running full length of tank either at side supported by posts or securely fastened to tank or tank-bands, not less than thirty (30) nor more than sixty (60) inches above platform.

MANNER OF APPLICATION: Safety-railings shall be securely fastened to tank-body, tank-bands or posts.

UNCOUPLING-LEVERS: Same as specified for "Box and other house cars."

END-LADDER CLEARANCE:

No part of car above end-sills within thirty (30) inches from side of car, *except* buffer-block, brake-shaft, brake-shaft brackets, brake-wheel or uncoupling-lever shall extend to within twelve (12) inches of a vertical plane parallel with end of car and passing through the inside face of knuckle when closed with coupler-horn against the buffer-block or end-sill, and no other part of end of car or fixtures on same above end-sills, other than exceptions herein noted, shall extend beyond the outer face of buffer-block.

TANK CARS WITHOUT SIDE-SILLS AND TANK CARS WITH SHORT SIDE-SILLS AND END-PLATFORMS.

HAND-BRAKES:

Number: Same as specified for "Box and other house cars."

Dimensions: Same as specified for "Box and other house cars."

Location: Each hand-brake shall be so located that it can be safely operated while car is in motion.

The brake-shaft shall be located on end of car to the left of center.

Manner of Application: Same as specified for "Box and other house cars."

RUNNING-BOARDS:

Number: One (1) continuous running-board around sides and ends; or two (2) running full length of tank, one (1) on each side.

Dimensions: Minimum width on sides, ten (10) inches.

Minimum width on ends, six (6) inches.

Location: Continuous around sides and ends of cars. On tank cars having end platforms extending to bolsters, running-boards shall extend from center to center of bolsters, one (1) on each side.

Manner of Application: If side running-boards are applied below center of tank, outside edge of running-boards shall extend not less than seven (7) inches beyond bulge of tank.

The running-boards at ends of car shall be not less than six (6) inches from a point vertically above the inside face of knuckle when closed with coupler-horn against the buffer-block, end-sill or back-stop.

Running-boards shall be securely fastened to tank or tank-bands.

SILL-STEPS:

Number: Same as specified for "Box and other house cars."

Dimensions: Same as specified for "Box and other house cars."

Location: One (1) near each end on each side under side-handhold.

Outside edge of tread of step shall be not more than four (4) inches inside of face of side of car, preferably flush with side of car.

Tread shall be not more than twenty-four (24), preferably not more than twenty-two (22), inches above the top of rail.

Manner of Application: Same as specified for "Box and other house cars."

LADDERS: [*If running-boards are so located as to make ladders necessary.*]

Number: Two (2) on cars with continuous running-boards.

Four (4) on cars with side running-boards.

Dimensions: Minimum clear length of tread, ten (10) inches.

Maximum spacing of treads, nineteen (19) inches.

Hard-wood treads, minimum dimensions, one and one-half (1½) by two (2) inches.

Wrought iron or steel treads, minimum diameter, five-eighths (⅝) of an inch.

Minimum clearance, two (2), preferably two and one-half (2½), inches.

Location: On cars with continuous running-boards, one (1) at right end of each side.

On cars with side running-boards, one (1) at each end of each running-board.

Manner of Application: Ladders shall be securely fastened with not less than one-half (½) inch bolts or rivets.

SIDE-HANDHOLDS:

Number: Four (4) or more.

Dimensions: Same as specified for "Box and other house cars."

Location: Horizontal: One (1) on face of each side-sill near each end on tank cars with short side-sills, or one (1) attached to top of running-board projecting outward above sill-steps or ladders on tank cars without side-sills. Clearance of outer end of handhold shall be not more than twelve (12) inches from end of car.

If side safety-railings are attached to tank or tank-bands four (4) additional vertical handholds shall be applied, one (1) as nearly as possible over each sill-step and securely fastened to tank or tank-band.

Manner of Application: Same as specified for "Box and other house cars."

END-HANDHOLDS:

Number: Four (4).

Dimensions: Same as specified for "Box and other house cars."

Location: Horizontal: One (1) near each side of each end of car on face of end-sill. Clearance of outer end of handhold shall be not more than sixteen (16) inches from side of car.

Manner of Application: Same as specified for "Box and other house cars."

TANK-HEAD HANDHOLDS:

Number: Two (2). [*Not required if safety-railing runs around ends of tank.*]

Dimensions: Minimum diameter five-eighths (⅝) of an inch, wrought iron or steel.

Minimum clearance two (2), preferably two and one-half (2½), inches.

LOCATION: Horizontal: One (1) across each head of tank not less than thirty (30) nor more than sixty (60) inches above platform on running-board. Clear length of handholds shall extend to within six (6) inches of outer diameter of tank at point of application.

MANNER OF APPLICATION: Tank-head handholds shall be securely fastened.

SAFETY-RAILINGS:

NUMBER: One (1) running around sides and ends of tank or two (2) running full length of tank.

DIMENSIONS: Minimum diameter, seven-eighths (7/8) of an inch, wrought iron or steel.

Minimum clearance, two and one-half (2½) inches.

LOCATION: Running full length of tank, not less than thirty (30) nor more than sixty (60) inches above platform or running-board.

MANNER OF APPLICATION: Safety-railings shall be securely fastened to tank or tank-bands and secured against end shifting.

UNCOUPLING-LEVERS: Same as specified for "Box and other house cars."

END-LADDER CLEARANCE:

No part of car above end-sills within thirty (30) inches from side of car, *except* buffer-block, brake-shaft, brake-shaft brackets, brake-wheel, running-boards or uncoupling-lever shall extend to within twelve (12) inches of a vertical plane parallel with end of car and passing through the inside face of knuckle when closed with coupler-horn against the buffer-block or end-sill, and no other part of end of car or fixtures on same, above end-sills, other than exceptions herein noted, shall extend beyond the outer face of buffer-block.

TANK CARS WITHOUT END-SILLS.

HAND-BRAKES:

NUMBER: Same as specified for "Box and other house cars."

DIMENSIONS: Same as specified for "Box and other house cars."

LOCATION: Each hand-brake shall be so located that it can be safely operated while car is in motion. The brake-shaft shall be located on end of car to the left of center.

MANNER OF APPLICATION: Same as specified for "Box and other house cars."

BRAKE-STEP: Same as specified for "Box and other house cars."

RUNNING-BOARDS:

Number: One (1).

Dimensions: Minimum width on sides, ten (10) inches.
Minimum width on ends, six (6) inches.

Location: Continuous around sides and ends of tank.

Manner of Application: If running-boards are applied below center of tank, outside edge of running-boards shall extend not less than seven (7) inches beyond bulge of tank.

Running-boards at ends of car shall be not less than six (6) inches from a point vertically above the inside face of knuckle when closed with coupler-horn against the buffer-block, end-sill or back-stop.

Running-boards shall be securely fastened to tank or tank-bands.

SILL-STEPS:

Number: Four (4). [*If tank has high running-boards, making ladders necessary, sill-steps must meet ladder requirements.*]

Dimensions: Same as specified for "Box and other house cars."

Location: One (1) near each end on each side, flush with outside edge of running-board as near end of car as practicable.

Tread not more than twenty-four (24), preferably not more than twenty-two (22), inches above the top of rail.

Manner of Application: Steps exceeding eighteen (18) inches in depth shall have an additional tread and be laterally braced.

Sill-steps shall be securely fastened with not less than one-half (½) inch bolts with nuts outside (when possible) and riveted over, or with one-half (½) inch rivets.

SIDE-HANDHOLDS:

Number: Four (4) or more.

Dimensions: Same as specified for "Box and other house cars."

Location: Horizontal: One (1) near each end on each side of car over sill-step, on running-board, not more than two (2) inches back from outside edge of running-board, projecting downward or outward.

Where such side-handholds are more than eighteen (18) inches from end of car, an additional handhold must be placed near each end on each side not more than thirty (30) inches above center line of coupler.

Clearance of outer end of handhold shall be not more than twelve (12) inches from end of car.

If safety-railings are on tank, four (4) additional vertical handholds shall be applied, one (1) over each sill-step on tank.

Manner of Application: Same as specified for "Box and other house cars."

END-HANDHOLDS:

Number: Four (4).

Dimensions: Same as specified for "Box and other house cars."

Location: Horizontal: One (1) near each side on each end of car on running-board, not more than two (2) inches back from edge of running-board projecting downward or outward, or on end of tank not more than thirty (30) inches above center line of coupler.

Manner of Application: Same as specified for "Box and other house cars."

SAFETY-RAILINGS:

Number: One (1).

Dimensions: Minimum diameter seven-eighths ($\frac{7}{8}$) of an inch, wrought iron or steel.

Minimum clearance two and one-half ($2\frac{1}{2}$) inches.

Location: Safety-railings shall be continuous around sides and ends of car, not less than thirty (30) nor more than sixty (60) inches above running-board.

Manner of Application: Safety-railings shall be securely fastened to tank or tank-bands, and secured against end shifting.

UNCOUPLING-LEVERS:

Number: Same as specified for "Box and other house cars."

Dimensions: Same as specified for "Box and other house cars," *except* that minimum length of uncoupling-lever shall be forty-two (42) inches, measured from center line of end of car to handle of lever.

Location: Same as specified for "Box and other house cars," *except* that uncoupling-lever shall be not more than thirty (30) inches above center line of coupler.

END-LADDER CLEARANCE:

No part of car above buffer-block within thirty (30) inches from side of car, *except* brake-shaft, brake-shaft brackets, brake-wheel or uncoupling-lever shall extend to within twelve (12) inches of a vertical plane parallel with end of car and passing through the inside face of knuckle when closed with coupler-horn against the buffer-block or back-stop, and no other part of end of car or fixtures on same, above buffer-block, other than exceptions herein noted, shall extend beyond the face of buffer-block.

CABOOSE CARS WITH PLATFORMS.

HAND-BRAKES:

NUMBER: Each caboose car shall be equipped with an efficient hand-brake which shall operate in harmony with the power-brake thereon.

The hand-brake may be of any efficient design, but must provide the same degree of safety as the design shown on Plate A.

DIMENSIONS: Same as specified for "Box and other house cars."

LOCATION: Each hand-brake shall be so located that it can be safely operated while car is in motion.

The brake-shaft on caboose cars with platforms shall be located on platform to the left of center.

MANNER OF APPLICATION: Same as specified for "Box and other house cars."

RUNNING-BOARDS:

NUMBER: One (1) longitudinal running-board.

DIMENSIONS: Same as specified for "Box and other house cars."

LOCATION: Full length of car, center of roof. [*On caboose cars with cupolas, longitudinal running-boards shall extend from cupola to ends of roof.*]

Outside-metal-roof cars shall have latitudinal extensions leading to ladder locations.

MANNER OF APPLICATION: Same as specified for "Box and other house cars."

LADDERS:

NUMBER: Two (2).

DIMENSIONS: None specified.

LOCATION: One (1) on each end.

MANNER OF APPLICATION: Same as specified for "Box and other house cars."

ROOF-HANDHOLDS:

NUMBER: One (1) over each ladder.

Where stiles of ladders extend twelve (12) inches or more above roof, no other roof-handholds are required.

DIMENSIONS: Same as specified for "Box and other house cars."

LOCATION: On roof of caboose, in line with and running parallel to treads of ladder, not less than eight (8) nor more than fifteen (15) inches from edge of roof.

MANNER OF APPLICATION: Same as specified for "Box and other house cars."

CUPOLA-HANDHOLDS:

Number: One (1) or more.

Dimensions: Minimum diameter, five-eighths (⅝) of an inch, wrought iron or steel.
Minimum clearance two (2), preferably two and one-half (2½), inches.

Location: One (1) continuous handhold extending around top of cupola not more than three (3) inches from edge of cupola-roof.
Four (4) right-angle handholds, one (1) at each corner, not less than sixteen (16) inches in clear length from point of angle, may take the place of the one (1) continuous handhold specified, if locations coincide.

Manner of Application: Cupola-handholds shall be securely fastened with not less than one-half (½) inch bolts with nuts outside and riveted over or with not less than one-half (½) inch rivets.

SIDE-HANDHOLDS:

Number: Four (4)

Dimensions: Minimum diameter, five-eighths (⅝) of an inch, wrought iron or steel.
Minimum clear length, thirty-six (36) inches.
Minimum clearance, two (2), preferably two and one-half (2½), inches.

Location: One (1) near each end on each side of car, curving downward toward center of car from a point not less than thirty (30) inches above platform to a point not more than eight (8) inches from bottom of car. Top end of handhold shall be not more than eight (8) inches from outside face of end-sheathing.

Manner of Application: Same as specified for "Box and other house cars."

END-HANDHOLDS:

Number: Four (4).

Dimensions: Same as specified for "Box and other house cars."

Location: Horizontal: One (1) near each side on each end of car on face of platform end-sill. Clearance of outer end of handhold shall be not more than sixteen (16) inches from end of platform end-sill.

Manner of Application: Same as specified for "Box and other house cars."

END PLATFORM-HANDHOLDS:

Number: Four (4).

Dimensions: Minimum diameter, five-eighths (⅝) of an inch, wrought iron or steel.
Minimum clearance, two (2), preferably two and one-half (2½), inches.

LOCATION: One (1) right-angle handhold on each side of each end extending horizontally from door-post to corner of car at approximate height of platform-rail, then downward to within twelve (12) inches of bottom of car.

MANNER OF APPLICATION: Handholds shall be securely fastened with bolts, screws, or rivets.

CABOOSE PLATFORM-STEPS:

Safe and suitable box steps leading to caboose platforms shall be provided at each corner of caboose.

Lower tread of step shall be not more than twenty-four (24) inches above top of rail.

UNCOUPLING-LEVERS: Same as specified for "Box and other house cars."

CABOOSE CARS WITHOUT PLATFORMS.

HAND-BRAKES:

NUMBER: Same as specified for "Box and other house cars."

DIMENSIONS: Same as specified for "Box and other house cars."

LOCATION: Each hand-brake shall be so located that it can be safely operated while car is in motion.

The brake-shaft on caboose cars without platforms shall be located on end of car to the left of center.

MANNER OF APPLICATION: Same as specified for "Box and other house cars."

BRAKE-STEP: Same as specified for "Box and other house cars."

RUNNING-BOARDS:

NUMBER: Same as specified for "Box and other house cars."

DIMENSIONS: Same as specified for "Box and other house cars."

LOCATION: Full length of car, center of roof. [*On caboose cars with cupolas, longitudinal running-boards shall extend from cupola to ends of roof.*]

Outside-metal-roof cars shall have latitudinal extensions leading to ladder locations.

MANNER OF APPLICATION: Same as specified for "Box and other house cars."

SILL-STEPS: Same as specified for "Box and other house cars."

SIDE-DOOR STEPS:

Number: Two (2) [*if caboose has side-doors*].

Dimensions: Minimum length, five (5) feet.

Minimum width, six (6) inches.

Minimum thickness of tread, one and one-half (1½) inches.

Minimum height of back-stop, three (3) inches.

Maximum height from top of rail to top of tread, twenty-four (24) inches.

Location: One (1) under each side-door.

Manner of Application: Side-door steps shall be supported by two (2) iron brackets having a minimum cross-sectional area seven-eighths (⅞) by three (3) inches or equivalent, each of which shall be securely fastened to car by not less than two (2) three-fourth (¾) inch bolts.

LADDERS:

Number: Four (4).

Dimensions: Same as specified for "Box and other house cars."

Location: Same as specified for "Box and other house cars" *except* when caboose has side doors, then side-ladders shall be located not more than eight (8) inches from doors.

Manner of Application: Same as specified for "Box and other house cars."

END-LADDER CLEARANCE:

No part of car above end-sills within thirty (30) inches from side of car, *except* buffer-block, brake-shaft, brake-wheel, brake-step, running-board or uncoupling-lever shall extend to within twelve (12) inches of a vertical plane parallel with end of car and passing through the inside face of knuckle when closed with coupler-horn against the buffer-block or end-sill, and no other part of end of car or fixtures on same above end-sills, other than exceptions herein noted, shall extend beyond the outer face of buffer-block.

ROOF-HANDHOLDS:

Number: Four (4).

Dimensions: Same as specified for "Box and other house cars."

Location: One (1) over each ladder, on roof in line with and running parallel to treads of ladder, not less than eight (8) nor more than fifteen (15) inches from edge of roof.

Where stiles of ladders extend twelve (12) inches or more above roof, no other roof-handholds are required.

Manner of Application: Roof-handholds shall be securely fastened with not less than one-half (½) inch bolts with nuts outside (when possible) and riveted over, or with not less than one-half (½) inch rivets.

CUPOLA-HANDHOLDS:

NUMBER: One (1) or more.

DIMENSIONS: Minimum diameter five-eighths (5/8) of an inch, wrought iron or steel. Minimum clearance, two (2), preferably two and one-half (2½), inches.

LOCATION: One (1) continuous cupola-handhold extending around top of cupola, not more than three (3) inches from edge of cupola roof.

Four (4) right-angle handholds, one (1) at each corner, not less than sixteen (16) inches in clear length from point of angle, may take the place of the one (1) continuous handhold specified, if locations coincide.

MANNER OF APPLICATION: Cupola-handhold shall be securely fastened with not less than one-half (½) inch bolts with nuts outside and riveted over or with not less than one-half (½) inch rivets.

SIDE-HANDHOLDS:

NUMBER: Four (4).

DIMENSIONS: Same as specified for "Box and other house cars."

LOCATION: Horizontal: One (1) near each end on each side of car, not less than twenty-four (24) nor more than thirty (30) inches above center line of coupler. Clearance of outer end of handhold shall be not more than eight (8) inches from end of car.

MANNER OF APPLICATION: Same as specified for "Box and other house cars."

SIDE-DOOR HANDHOLDS:

NUMBER: Four (4): Two (2) curved, two (2) straight.

DIMENSIONS: Minimum diameter five-eighths (5/8) of an inch, wrought iron or steel. Minimum clearance two (2), preferably two and one-half (2½), inches.

LOCATION: One (1) curved handhold, from a point at side of each door opposite ladder, not less than thirty-six (36) inches above bottom of car, curving away from door downward to a point not more than six (6) inches above bottom of car.

One (1) vertical handhold at ladder side of each door from a point not less than thirty-six (36) inches above bottom of car to a point not more than six (6) inches above level of bottom of door.

MANNER OF APPLICATION: Side-door handholds shall be securely fastened with not less than one-half (½) inch bolts with nuts outside (when possible) and riveted over, or with not less than one-half (½) inch rivets.

HORIZONTAL END-HANDHOLDS:

NUMBER: Same as specified for "Box and other house cars."

DIMENSIONS: Same as specified for "Box and other house cars."

LOCATION: Same as specified for "Box and other house cars," *except* that one (1) additional end-handhold shall be on each end of cars with platform end-sills as heretofore described, unless car has door in center of end. Said handhold shall be not less than twenty-four (24) inches in length, located near center of car, not less than thirty (30) nor more than sixty (60) inches above platform end-sill.

MANNER OF APPLICATION: Same as specified for "Box and other house cars."

VERTICAL END-HANDHOLDS: Same as specified for "Box and other house cars."

UNCOUPLING-LEVERS: Same as specified for "Box and other house cars."

PASSENGER-TRAIN CARS WITH WIDE VESTIBULES.

HAND-BRAKES:

NUMBER: Each passenger-train car shall be equipped with an efficient hand-brake, which shall operate in harmony with the power-brake thereon.

LOCATION: Each hand-brake shall be so located that it can be safely operated while car is in motion.

SIDE-HANDHOLDS:

NUMBER: Eight (8).

DIMENSIONS: Minimum diameter, five-eighths (⅝) of an inch, metal.
Minimum clear length, sixteen (16) inches.
Minimum clearance, one and one-fourth (1¼), preferably one and one-half (1½), inches.

LOCATION: Vertical: One (1) on each vestibule door post.

MANNER OF APPLICATION: Side-handholds shall be securely fastened with bolts, rivets or screws.

END-HANDHOLDS:

NUMBER: Four (4).

DIMENSIONS: Minimum diameter, five-eighths (⅝) of an inch, wrought iron or steel.
Minimum clear length, sixteen (16) inches.
Minimum clearance, two (2), preferably two and one-half (2½), inches.
Handholds shall be flush with or project not more than one (1) inch beyond vestibule face.

LOCATION: Horizontal: One (1) near each side on each end projecting downward from face of vestibule end-sill. Clearance of outer end of handhold shall be not more than sixteen (16) inches from side of car.

Manner of Application: End-handholds shall be securely fastened with bolts or rivets.

When marker-sockets or brackets are located so that they can not be conveniently reached from platforms, suitable steps and handholds shall be provided for men to reach such sockets or brackets.

UNCOUPLING-LEVERS:

Uncoupling attachments shall be applied so they can be operated by a person standing on the ground.

Minimum length of ground uncoupling attachment, forty-two (42) inches, measured from center line of end of car to handle of attachment.

On passenger-train cars used in freight or mixed-train service, the uncoupling attachments shall be so applied that the coupler can be operated from left side of car.

PASSENGER-TRAIN CARS WITH OPEN END-PLATFORMS.

HAND-BRAKES:

Number: Each passenger-train car shall be equipped with an efficient hand-brake, which shall operate in harmony with the power-brake thereon.

Location: Each hand-brake shall be so located that it can be safely operated while car is in motion.

END-HANDHOLDS:

Number: Four (4).

Dimensions: Minimum diameter, five-eighths (5/8) of an inch, wrought iron or steel.

Minimum clear length, sixteen (16) inches.

Minimum clearance, two (2), preferably two and one-half (2½), inches.

Handholds shall be flush with or project not more than one (1) inch beyond face of end-sill.

Location: Horizontal: One (1) near each side of each end on face of platform end-sill, projecting downward. Clearance of outer end of handhold shall be not more than sixteen (16) inches from end of end-sill.

Manner of Application: End-handholds shall be securely fastened with bolts or rivets.

END PLATFORM-HANDHOLDS:

Number: Four (4). [*Cars equipped with safety-gates do not require end platform-handholds.*]

Dimensions: Minimum clearance two (2), preferably two and one-half (2½), inches, metal.

Location: Horizontal from or near door-post to a point not more than twelve (12) inches from corner of car, then approximately vertical to a point not more than six (6) inches from top of platform. Horizontal portion shall be not less than twenty-four (24) inches in length nor more than forty (40) inches above platform.

MANNER OF APPLICATION: End platform-handholds shall be securely fastened with bolts, rivets, or screws.

UNCOUPLING-LEVERS:

Uncoupling attachments shall be applied so they can be operated by a person standing on the ground.

Minimum length of ground uncoupling attachment, forty-two (42) inches, measured from center of end of car to handle of attachment.

On passenger-train cars used in freight or mixed-train service the uncoupling attachments shall be so applied that the coupler can be operated from left side of car.

PASSENGER-TRAIN CARS WITHOUT END-PLATFORMS.

HAND-BRAKES:

NUMBER: Each passenger-train car shall be equipped with an efficient hand-brake which shall operate in harmony with the power-brake thereon.

LOCATION: Each hand-brake shall be so located that it can be safely operated while car is in motion.

SILL-STEPS:

NUMBER: Four (4).

DIMENSIONS: Minimum length of tread ten (10), preferably twelve (12), inches.

Minimum cross-sectional area one-half (½) by one and one-half (1½) inches or equivalent, wrought iron or steel.

Minimum clear depth eight (8) inches.

LOCATION: One (1) near each end on each side not more than twenty-four (24) inches from corner of car to center of tread of sill-step.

Outside edge of tread of step shall be not more than two (2) inches inside of face of side of car.

Tread shall be not more than twenty-four (24), preferably not more than twenty-two (22), inches above the top of rail.

MANNER OF APPLICATION: Steps exceeding eighteen (18) inches in depth shall have an additional tread and be laterally braced.

Sill-steps shall be securely fastened with not less than one-half (½) inch bolts with nuts outside (when possible) and riveted over, or with not less than one-half (½) inch rivets.

SIDE-HANDHOLDS:

NUMBER: Four (4).

DIMENSIONS: Minimum diameter, five-eighths (⅝) of an inch, wrought iron or steel.

Minimum clear length, sixteen (16), preferably twenty-four (24), inches.

Minimum clearance, two (2), preferably two and one-half (2½), inches.

LOCATION: Horizontal or vertical: One (1) near each end on each side of car over sill-step.

If horizontal, not less than twenty-four (24) nor more than thirty (30) inches above center line of coupler.

If vertical, lower end not less than eighteen (18) nor more than twenty-four (24) inches above center line of coupler.

MANNER OF APPLICATION: Side-handholds shall be securely fastened with bolts, rivets or screws.

END-HANDHOLDS:

NUMBER: Four (4).

DIMENSIONS: Minimum diameter, five-eighths (⅝) of an inch, wrought iron or steel.

Minimum clear length, sixteen (16) inches.

Minimum clearance, two (2), preferably two and one-half (2½), inches.

LOCATION: Horizontal: One (1) near each side on each end projecting downward from face of end-sill or sheathing. Clearance of outer end of handhold shall be not more than sixteen (16) inches from side of car.

MANNER OF APPLICATION: Handholds shall be flush with or project not more than one (1) inch beyond face of end-sill.

End-handholds shall be securely fastened with bolts or rivets.

When marker sockets or brackets are located so that they can not be conveniently reached from platforms, suitable steps and handholds shall be provided for men to reach such sockets or brackets.

END-HANDRAILS: [*On cars with projecting end-sills.*]

NUMBER: Four (4).

DIMENSIONS: Minimum diameter, five-eighths (⅝) of an inch, wrought iron or steel.

Minimum clearance, two (2), preferably two and one-half (2½), inches.

LOCATION: One (1) on each side of each end, extending horizontally from door-post or vestibule-frame to a point not more than six (6) inches from corner of car, then approximately vertical to a point not more than six (6) inches from top of platform end-sill; horizontal portion shall be not less than thirty (30) nor more than (60) inches above platform end-sill.

MANNER OF APPLICATION: End hand-rails shall be securely fastened with bolts, rivets or screws.

SIDE-DOOR STEPS:

NUMBER: One (1) under each door.

DIMENSIONS: Minimum length of tread, ten (10), preferably twelve (12), inches.

Minimum cross-sectional area, one-half (½) by one and one-half (1½) inches or equivalent, wrought iron or steel.

Minimum clear depth, eight (8) inches.

LOCATION: Outside edge of tread of step not more than two (2) inches inside of face of side of car.

Tread not more than twenty-four (24), preferably not more than twenty-two (22), inches above the top of rail.

MANNER OF APPLICATION: Steps exceeding eighteen (18) inches in depth shall have an additional tread and be laterally braced.

Side-door steps shall be securely fastened with not less than one-half (½) inch bolts with nuts outside (when possible) and riveted over, or with not less than one-half (½) inch rivets.

A vertical handhold not less than twenty-four (24) inches in clear length shall be applied above each side-door step on door-post.

UNCOUPLING-LEVERS:

Uncoupling attachments shall be applied so they can be operated by a person standing on the ground.

Minimum length of ground uncoupling attachment, forty-two (42) inches, measured from center line of end of car to handle of attachment.

On passenger-train cars used in freight or mixed-train service, the uncoupling attachment shall be so applied that the coupler can be operated from the left side of car.

STEAM LOCOMOTIVES USED IN ROAD SERVICE.

TENDER SILL-STEPS:

NUMBER: Four (4) on tender.

DIMENSIONS: Bottom tread not less than eight (8) by twelve (12) inches, metal. [*May have wooden treads.*]

If stirrup-steps are used, clear length of tread shall be not less than ten (10), preferably twelve (12), inches.

LOCATION: One (1) near each corner of tender on sides.

MANNER OF APPLICATION: Tender sill-steps shall be securely fastened with bolts or rivets.

PILOT SILL-STEPS:

Number: Two (2).

Dimensions: Tread not less than eight (8) inches in width by ten (10) inches in length, metal.

[May have wooden treads.]

Location: One (1) on or near each end of buffer-beam outside of rail and not more than sixteen (16) inches above rail.

Manner of Application: Pilot sill-steps shall be securely fastened with bolts or rivets.

PILOT-BEAM HANDHOLDS:

Number: Two (2).

Dimensions: Minimum diameter, five-eighths ($\frac{5}{8}$) of an inch, wrought iron or steel.

Minimum clear length, fourteen (14), preferably sixteen (16), inches.

Minimum clearance, two and one-half ($2\frac{1}{2}$) inches.

Location: One (1) on each end of buffer-beam.

[If uncoupling-lever extends across front end of locomotive to within eight (8) inches of end of buffer-beam, and is seven-eighths ($\frac{7}{8}$) of an inch or more in diameter, securely fastened, with a clearance of two and one-half ($2\frac{1}{2}$) inches, it is a handhold.]

Manner of Application: Pilot-beam handholds shall be securely fastened with bolts or rivets

SIDE-HANDHOLDS:

Number: Six (6).

Dimensions: Minimum diameter, if horizontal, five-eighths ($\frac{5}{8}$) of an inch; if vertical, seven-eighths ($\frac{7}{8}$) of an inch, wrought iron or steel.

Horizontal, minimum clear length, sixteen (16) inches.

Vertical, clear length equal to approximate height of tank.

Minimum clearance two (2), preferably two and one-half ($2\frac{1}{2}$), inches.

Location: Horizontal or vertical: If vertical, one (1) on each side of tender within six (6) inches of rear or on corner, if horizontal, same as specified for "Box and other house cars."

One (1) on each side of tender near gangway; one (1) on each side of locomotive at gangway; applied vertically.

Manner of Application: Side-handholds shall be securely fastened with not less than one-half ($\frac{1}{2}$) inch bolts or rivets.

REAR-END HANDHOLDS:

Number: Two (2).

Dimensions: Minimum diameter, five-eighths ($\frac{5}{8}$) of an inch, wrought iron or steel.

Minimum clear length, fourteen (14) inches.

Minimum clearance two (2), preferably two and one-half ($2\frac{1}{2}$), inches.

LOCATION: Horizontal: One (1) near each side of rear end of tender on face of end-sill. Clearance of outer end of handhold shall be not more than sixteen (16) inches from side of tender.

MANNER OF APPLICATION: Rear-end handholds shall be securely fastened with not less than one-half (½) inch bolts or rivets.

UNCOUPLING-LEVERS:

NUMBER: Two (2) double levers, operative from either side.

DIMENSIONS: Rear-end levers shall extend across end of tender with handles not more than twelve (12), preferably nine (9), inches from side of tender with a guard bent on handle to give not less than two (2) inches clearance around handle.

LOCATION: One (1) on rear end of tender and one (1) on front end of locomotive.

Handles of front-end levers shall be not more than twelve (12), preferably nine (9), inches from ends of buffer-beam, and shall be so constructed as to give a minimum clearance of two (2) inches around handle.

MANNER OF APPLICATION: Uncoupling-levers shall be securely fastened with bolts or rivets.

COUPLERS: Locomotives shall be equipped with automatic couplers at rear of tender and front of locomotive.

STEAM LOCOMOTIVES USED IN SWITCHING SERVICE.

FOOTBOARDS:

NUMBER: Two (2) or more.

DIMENSIONS: Minimum width of tread, ten (10) inches, wood.

Minimum thickness of tread, one and one-half (1½), preferably two (2), inches.

Minimum height of back-stop, four (4) inches above tread.

Height from top of rail to top of tread, not more than twelve (12) nor less than nine (9) inches.

LOCATION: Ends or sides.

If on ends, they shall extend not less than eighteen (18) inches outside of gauge of straight track, and shall be not more than twelve (12) inches shorter than buffer-beam at each end.

MANNER OF APPLICATION: End footboards may be constructed in two (2) sections, *provided* that practically all space on each side of coupler is filled; each section shall be not less than three (3) feet in length.

Footboards shall be securely bolted to two (2) one (1) by four (4) inches metal brackets, *provided* footboard is not cut or notched at any point.

If footboard is cut or notched or in two (2) sections, not less than four (4) one (1) by three (3) inches metal brackets shall be used, two (2) located on each side of coupler. Each bracket shall be securely bolted to buffer-beam, end-sill or tank-frame by not less than two (2) seven-eighths (⅞) inch bolts.

If side footboards are used, a substantial handhold or rail shall be applied not less than thirty (30) inches nor more than sixty (60) inhces above tread of footboard.

SILL-STEPS:

Number:	Two (2) or more.
Dimensions:	Lower tread of step shall be not less that eight (8) by twelve (12) inches, metal. [*May have wooden treads.*] If stirrup-steps are used, clear length of tread shall be not less than ten (10), preferably twelve (12), inches.
Location:	One (1) or more on each side at gangway secured to locomotive or tender.
Manner of Application:	Sill-steps shall be securely fastened with bolts or rivets.

END-HANDHOLDS:

Number:	Two (2).
Dimensions:	Minimum diameter, one (1) inch, wrought iron or steel. Minimum clearance, four (4) inches, *except* at coupler casting or braces, when minimum clearance shall be two (2) inches.
Location:	One (1) on pilot buffer-beam; one on rear end of tender, extending across front end of locomotive and rear end of tender. Ends of handholds shall be not more than six (6) inches from ends of buffer-beam or end-sill, securely fastened at ends.
Manner of Application:	End-handholds shall be securely fastened with bolts or rivets.

SIDE-HANDHOLDS:

Number:	Four (4).
Dimensions:	Minimum diameter, seven-eighths (⅞) of an inch, wrought iron or steel. Clear length equal to approximate height of tank. Minimum clearance, two (2), preferably two and one-half (2½), inches.
Location:	Vertical. One (1) on each side of tender near front corner; one (1) on each side of locomotive at gangway.
Manner of Application:	Side-handholds shall be securely fastened with bolts or rivets.

UNCOUPLING-LEVERS:

Number:	Two (2) double levers, operative from either side.
Dimensions:	Handles of front-end levers shall be not more than twelve (12), preferably nine (9), inches from ends of buffer-beam, and shall be so constructed as to give a minimum clearance of two (2) inches around handle.

Rear-end levers shall extend across end of tender with handles not more than twelve (12), preferably nine (9), inches from side of tender, with a guard bent on handle to give not less than two (2) inches clearance around handle.

LOCATION: One (1) on rear end of tender and one (1) on front end of locomotive.

HANDRAILS AND STEPS FOR HEADLIGHTS:

Switching-locomotives with sloping tenders with manhole or headlight located on sloping portion of tender shall be equipped with secure steps and handrail or with platform and handrail leading to such manhole or headlight.

END-LADDER CLEARANCE:

No part of locomotive or tender *except* draft-rigging, coupler and attachments, safety-chains, buffer-block, foot-board, brake-pipe, signal-pipe, steam-heat pipe or arms of uncoupling-lever shall extend to within fourteen (14) inches of a vertical plane passing through the inside face of knuckle when closed with horn of coupler against buffer-block or end-sill.

COUPLERS: Locomotives shall be equipped with automatic couplers at rear of tender and front of locomotive.

SPECIFICATIONS COMMON TO ALL STEAM LOCOMOTIVES.

HAND-BRAKES:

Hand-brakes will not be required on locomotives nor on tenders when attached to locomotives.

If tenders are detached from locomotives and used in special service, they shall be equipped with efficient hand-brakes.

RUNNING-BOARDS:

NUMBER: Two (2).

DIMENSIONS: Not less than ten (10) inches wide. If of wood, not less than one and one-half ($1\frac{1}{2}$) inches in thickness; if of metal, not less than three-sixteenths ($\frac{3}{16}$) of an inch, properly supported.

LOCATION: One (1) on each side of boiler extending from cab to front end near pilot-beam. [*Running-boards may be in sections. Flat-top steam-chests may form section of running-board.*]

Manner of Application: Running boards shall be securely fastened with bolts, rivets or studs.

Locomotives having Wootten type boilers with cab located on top of boiler more than twelve (12) inches forward from boiler-head shall have suitable running-boards running from cab to rear of locomotive, with handrailings not less than twenty (20) nor more than forty-eight (48) inches above outside edge of running-boards, securely fastened with bolts, rivets or studs.

HANDRAILS:

Number: Two (2) or more.

Dimensions: Not less than one (1) inch in diameter, wrought iron or steel.

Location: One on each side of boiler extending from near cab to near front end of boiler, and extending across front end of boiler, not less than twenty-four (24) nor more than sixty-six (66) inches above running-board.

Manner of Application: Handrails shall be securely fastened to boiler.

TENDERS OF VANDERBILT TYPE:

Tenders known as the Vanderbilt type shall be equipped with running-boards; one (1) on each side of tender not less than ten (10) inches in width and one on top of tender not less than forty-eight (48) inches in width, extending from coal space to rear of tender.

There shall be a handrail on each side of top running-board, extending from coal space to rear of tank, not less than one (1) inch in diameter and not less than twenty (20) inches in height above running-board from coal space to manhole.

There shall be a handrail extending from coal space to within twelve (12) inches of rear of tank, attached to each side of tank above side running-board, not less than thirty (30) nor more than sixty-six (66) inches above running board.

There shall be one (1) vertical end handhold on each side of Vanderbilt type of tender, located within eight (8) inches of rear of tank extending from within eight (8) inches of top of end-sill to within eight (8) inches of side handrail. Post supporting rear end of side running-board if not more than two (2) inches in diameter and properly located, may form section of handhold.

An additional horizontal end handhold shall be applied on rear end of all Vanderbilt type of tenders which are not equipped with vestibules. Handhold to be located not less than thirty (30) nor more than sixty-six (66) inches above top of end-sill. Clear length of handhold to be not less than forty-eight (48) inches.

Ladders shall be applied at forward ends of side running-boards.

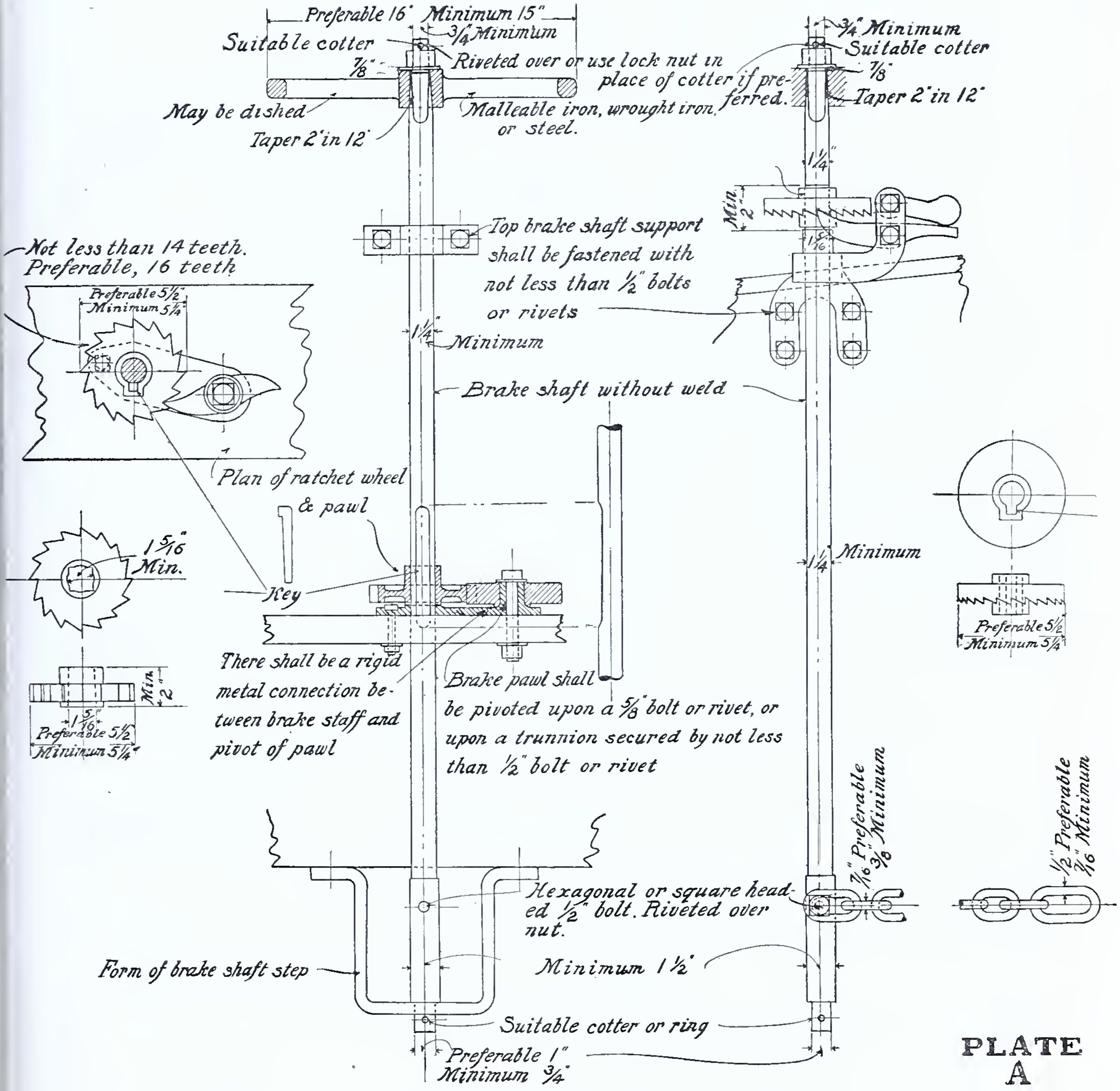
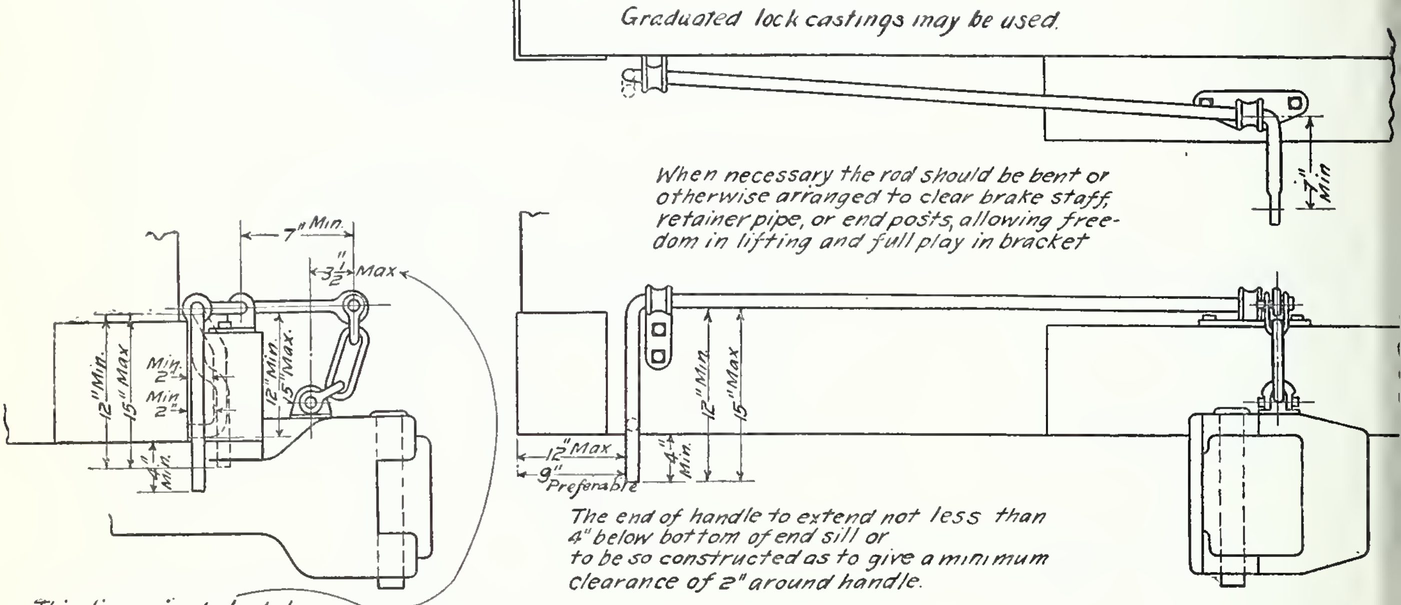

Preferable 16" Minimum 15"
3/4" Minimum
Suitable cotter
Riveted over or use lock nut in place of cotter if preferred.
7/8"
May be dished
Malleable iron, wrought iron, or steel.
Taper 2" in 12"
3/4" Minimum
Suitable cotter
7/8"
Taper 2" in 12"
1 1/4"
Min. 2"
1 5/16"
Top brake shaft support shall be fastened with not less than 1/2" bolts or rivets
Not less than 14 teeth. Preferable, 16 teeth
Preferable 5 1/2" Minimum 5 1/4"
1 1/4" Minimum
Brake shaft without weld
Plan of ratchet wheel & pawl
1 5/16" Min.
Key
1 1/4" Minimum
Preferable 5 1/2 Minimum 5 1/4
Min. 2"
1 5/16"
Preferable 5 1/2 Minimum 5 1/4
There shall be a rigid metal connection between brake staff and pivot of pawl
Brake pawl shall be pivoted upon a 5/8" bolt or rivet, or upon a trunnion secured by not less than 1/2" bolt or rivet
7/16" Preferable 3/8" Minimum
1/2" Preferable 7/16" Minimum
Hexagonal or square headed 1/2" bolt. Riveted over nut.
Form of brake shaft step
Minimum 1 1/2"
Suitable cotter or ring
Preferable 1" Minimum 3/4"

PLATE A

[*Any efficient arrangement of ratchet-wheel and pawl may be used.*]



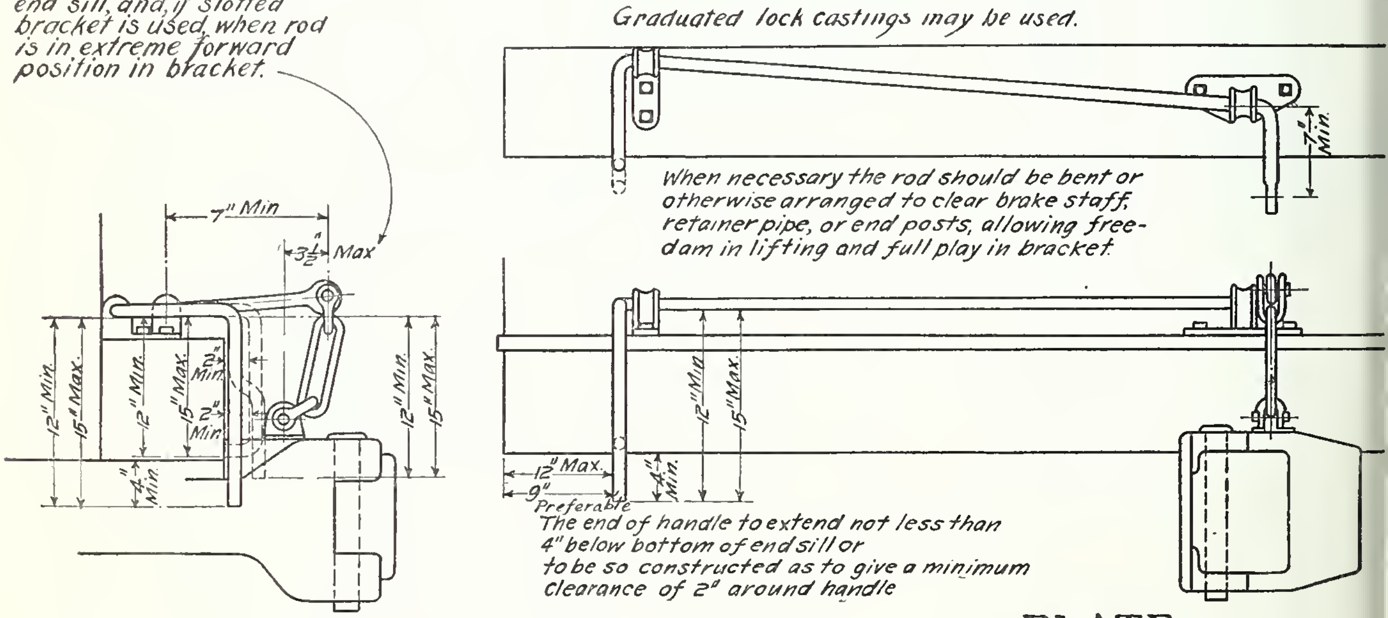
Graduated lock castings may be used.

When necessary the rod should be bent or otherwise arranged to clear brake staff, retainer pipe, or end posts, allowing freedom in lifting and full play in bracket

The end of handle to extend not less than 4" below bottom of end sill or to be so constructed as to give a minimum clearance of 2" around handle.

Application to concealed endsill cars

This dimension to be taken when horn of coupler is against buffer block or end sill, and, if slotted bracket is used, when rod is in extreme forward position in bracket.



Graduated lock castings may be used.

When necessary the rod should be bent or otherwise arranged to clear brake staff, retainer pipe, or end posts, allowing freedom in lifting and full play in bracket.

The end of handle to extend not less than 4" below bottom of end sill or to be so constructed as to give a minimum clearance of 2" around handle

Application to outside endsill cars

PLATE B

HANDRAILS AND STEPS FOR HEADLIGHTS:

Locomotives having headlights which can not be safely and conveniently reached from pilot-beam or steam-chests shall be equipped with secure handrails and steps suitable for the use of men in getting to and from such headlights.

A suitable metal end or side-ladder shall be applied to all tanks more than forty-eight (48) inches in height, measured from the top of end-sill, and securely fastened with bolts or rivets.

COUPLERS: Locomotives shall be equipped with automatic couplers at rear of tender and front of locomotive.

Cars of construction not covered specifically in the foregoing sections, relative to handholds, sill-steps, ladders, hand-brakes and running-boards may be considered as of special construction, but shall have, as nearly as possible, the same complement of handholds, sill-steps, ladders, hand-brakes and running-boards as are required for cars of the nearest approximate type.

"RIGHT" or "LEFT" refers to side of person when facing end or side of car from ground.

To provide for the usual inaccuracies of manufacturing and for wear, where sizes of metal are specified, a total variation of five (5) per cent below size given is permitted.

And it is further ordered, That a copy of this order be at once served on all common carriers, subject to the provisions of said act, in a sealed envelope by registered mail.

By the Commission:

EDWARD A. MOSELEY, *Secretary.*

A true copy.

Edw. A. Moseley

Secretary.

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